THE CALIFORNIA LOW EMISSIONS AND REACTIVITY PROGRAM (CLEAR) FOR AEROSOL COATING PRODUCTS

Adopt new Article 3.1, Aerosol Coating Products, sections 94530-94539, Title 17, California Code of Regulations, to read as follows:

SUBCHAPTER 8.5 CONSUMER PRODUCTS

Article 3.1 Aerosol Coating Products

94530 Purpose and Applicability

(a) **Purpose**

The purpose of this article is to provide a voluntary alternative method for manufacturers and marketers of aerosol coating products to comply with the percent by weight volatile organic compound (VOC) limits that are specified in Title 17, California Code of Regulations, sections 94520-94528, (Aerosol Coatings Regulation). This alternate method is provided to allow responsible parties the option of voluntarily marketing aerosol coating products which meet the photochemical reactivity-based CLEAR limits in section 94531 and other requirements as specified in this Article 3.1 rather than the mass based VOC limits in Article 3, section 94522.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

(b) **Applicability**

This article may be used as an alternative means to comply with the Aerosol Coatings Regulation for any person who sells, supplies, offers for sale, applies, or manufactures aerosol coating products for use in the State of California, except as provided in section 94523.

Unless modified by this Article 3.1, all other provisions of the Aerosol Coatings Regulation, sections 94520-94524 and 94526-94528, shall apply.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94531 Definitions

(a) For the purposes of this article, the definitions found in section 94521 of the Aerosol Coatings Regulation and the following additional definitions shall apply:

(1) "Absolute Maximum Incremental Reactivity" (MIR_{abs}) means the grams of ozone formed per gram (g) of volatile organic compound (VOC) emitted.

(2) "Base Reactive Organic Gas" means a mixture of reactive organic gases utilized in the parameters and definition of the absolute MIR scale. The base ROG is used to represent the range of chemical compositions resulting from a variety of conditions including anthropogenic emissions occurring in the ambient air of urban areas.

(3) "Kinetic Reactivity" (KR) means the fraction of VOC reacting in the atmosphere.

(4) "k_{OH}" means the reaction rate constant of the reaction of a hydroxyl (OH) radical with a VOC at 20EC and 1 atmosphere pressure.

(5) "Maximum Incremental Reactivity" (MIR) means the maximum weight of ozone formed by adding a compound to the "base ROG" mixture per weight of compound added expressed to hundredths of a gram, (g O_3/g VOC).

(6) "Mechanistic Reactivity" (MR) means the moles of ozone formed per mole of VOC reacting.

(7) "Nonvolatile Ingredient" means any ingredient which does not volatilize, as defined by the Air Resources Board (ARB) Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products.

(8) "Ozone" is the main ingredient of photochemical smog. It is a reactive toxic gaseous molecule consisting of three oxygen atoms, (O_3). It is a product of the photochemical processes involving the sun's energy.

(9) "Product-Weighted Absolute MIR" ($PWMIR_{abs}$) means product-weighted relative MIR ($PWMIR_{rel}$), shown in equation in this subpart (a), (10)(b), multiplied by the absolute MIR value of the Base Reactive Organic Gas. The $PWMIR_{abs}$ is expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging). The $PWMIR_{abs}$ is the total product reactivity in units of g O_3 /g product. Using the values specified in section 94533(d), $PWMIR_{abs}$ is calculated according to the following equation:

(a) Product-Weighted MIR_{abs} = Product-Weighted MIR_{rel} x MIR_{abs} for Base ROG

(10) "Product-Weighted Relative MIR" ($PWMIR_{rel}$) means the sum of all weighted-MIR_{rel}'s for all ingredients in a product. Using the values specified in section 94533(d), $PWMIR_{rel}$ is calculated according to the following equations:

(a) Weighted MIR (Wtd-$MIR)_{rel}$ for an ingredient = Weight fraction VOC x MIR_{rel},

and,

(b) Product-Weighted MIR_{rel} = $(Wtd - MIR_{rel})_1$ + $(Wtd - MIR_{rel})_2$ + þ + $(Wtd - MIR_{rel})_N$

where,

Wtd-MIR_{rel}	=	the MIR_{rel} of each ingredient in a product multiplied by the weight fraction of that ingredient, as shown in equation (9)(a);
1,2,...N	=	each ingredient in the product up to the total N ingredients in the product.

(11) "Reactive Organic Gas" (ROG) means, for the purposes of this article, the same as the "Volatile Organic Compound" (VOC) definition found in section 94521(62)(a).

(12) "Relative MIR" (MIR_{rel}) means the ratio of the MIR_{abs} to the base ROG. The MIR_{rel} value is unitless.

(13) "Upper Limit MIR" (ULMIR) means the kinetic reactivity (KR) multiplied by the mechanistic reactivity (MR) and unit conversion factors. The units for ULMIR are g O_3/g VOC ingredient. ULMIR can be calculated with the following equation:

ULMIR = Upper Limit KR x Upper Limit MR

(14) "Weight Fraction" means the ratio of the weight of an ingredient to the total net weight of the product, expressed to hundredths in grams of ingredient per gram of product (excluding container and packaging) and calculated according to the following equation:

$$\textit{Weight Fraction} = \frac{\textit{Weight of the ingredient}}{\textit{Total product net weight (excluding container and packaging)}}$$

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94532 CLEAR Limits for Aerosol Coating Products

(a)(1) Except as specified below, all of the requirements of section 94522 shall apply.

(2) As a voluntary alternative to the VOC limits specified in section 94522, a person may sell, supply, offer for sale, or manufacture for use in California any aerosol coating products which, at the time of sale or manufacture, has a $PWMIR_{abs}$ value no greater than the CLEAR Limit, specified in the following Table of CLEAR Limits:

Table of CLEAR Limits
(VOC Limits, expressed as percent by weight of product)
(CLEAR Limits (to be determined), expressed as grams ozone per gram of product)

	Effective Date	
	December 31, 1999	
	VOC Limit, wt%	CLEAR Limit
General Coatings		
Clear Coatings	40.0	
Flat Paint Products	30.0	
Fluorescent Coatings	45.0	
Metallic Coatings	50.0	
Nonflat Paint Products	30.0	
Primers	30.0	
Specialty Coatings		
Art Fixatives or Sealants	70.0	
Auto Body Primers	50.0	
Automotive Bumper and Trim Products	75.0	
Aviation or Marine Primers	70.0	
Aviation Propeller Coatings	75.0	
Corrosion Resistant Brass, Bronze, or Copper Coatings	70.0	

	Effective Date	
	December 31, 1999	
	VOC Limit, wt%	CLEAR Limit
Specialty Coatings (continued)		
High Temperature Coatings	55.0	
Hobby/Model/Craft Coatings: Enamel Lacquer Clear or Metallic	 70.0 70.0 75.0	
Marine Spar Varnishes	70.0	
Photograph Coatings	70.0	
Pleasure Craft Finish Primers, Surfacers, or Undercoaters	55.0	
Pleasure Craft Topcoats	55.0	
Shellac Sealers: Clear Pigmented	 70.0 60.0	
Slip-Resistant Coatings	70.0	
Spatter/Multicolor Coatings	60.0	
Vinyl/Fabric/Leather/ Polycarbonate	70.0	
Webbing/Veil Coatings	70.0	
Weld-Through Primers	60.0	

	Effective Date	
	December 31, 1999	
	VOC Limit, wt%	CLEAR Limit
Specialty Coatings (continued)		
Wood Touch-Up, Repair, or Restoration Coatings	75.0	

(b) **Products Containing Methylene Chloride.** After the effective date of this Article 3.1, for any aerosol coating product for which CLEAR Limits are specified under subpart (a)(2) of this section, no person shall sell, supply, offer for sale, apply, or manufacture for use in California any aerosol coating product which contains methylene chloride unless the product contained methylene chloride in 1997. Any product containing methylene chloride in 1997 can be reformulated to meet the CLEAR limits as long as the methylene chloride content in the reformulated product does not increase.

(c) **Multicomponent Kits Requirements for Products Formulated to meet CLEAR Limits.** Any person utilizing this article, shall not sell, supply, offer for sale, apply, or manufacture for use in California any multi-component kit, as defined in section 94521, in which the product weighted MIR_{abs} ($PWMIR_{abs}$) is greater than the total of all the CLEAR limits that would be allowed in the multi-component kit if each component product in the kit had separately met the applicable CLEAR Limit. Kit $PWMIR_{abs}$ and Total CLEAR are calculated as in equations (1), (2) and (3) below:

(1) $\textbf{Kit PWMIR}_{abs} = (PWMIR_{abs(1)} \times W_1) + (PWMIR_{abs(2)} \times W_2) + \beta + (PWMIR_{abs(n)} \times W_n)$

(2) $\textbf{Total CLEAR} = (CLEAR_1 \times W_1) + (CLEAR_2 \times W_2) + \beta + (CLEAR_n \times W_n)$

(3) $\textbf{Kit PWMIR}_{abs} \# \textbf{Total CLEAR}$

Where:

W = the weight of the product contents (excluding container)
Subscript 1 denotes the first component product in the kit

Subscript 2 denotes the second component product in the kit
Subscript n denotes any additional component product

(d) **Products Assembled by Adding Bulk Paint to Aerosol Containers of Propellant**. No person shall sell, supply, offer for sale, apply, or manufacture for use in the state of California any aerosol coating product assembled by adding bulk paint to aerosol containers of propellant, unless such products comply with either the limits in section 94522 or the MIR limits specified in section 94532(a).

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94533 Assignment of Maximum Incremental Reactivity (MIR) Values

For the purposes of this article MIR values are assigned as follows:

(a) All ingredients which do not contain carbon shall each be assigned a MIR value of 0.0.

(b) All nonvolatile ingredients (including resins and other solids) in an aerosol coating finished product shall each be assigned an MIR value of 0.0. Non-volatility to be determined under ARB Consumer Products Method 310.

(c) All compounds specified in section 94521(a)62(A) and (B) shall be assigned a MIR value of 0.0.

(d) **Table of Specific MIR Values (Partial)**

VOC Ingredient	Relative MIR	Absolute MIR	Uncertainty Multiplier	Effective Date
1,2,3-Trimethyl Benzene	3.03	12.31		12/31/99
1,2,4-Trimethyl Benzene	1.31	5.33		12/31/99
1,2-Butandiol	0.41	1.65		12/31/99
1,3,5-Trimethyl Benzene	3.37	13.67		12/31/99
1-Butene	2.61	10.58		12/31/99
1-Hexene	1.40	5.69		12/31/99
1-Pentene	1.78	7.23		12/31/99
2-(2-Ethoxyethoxy) Ethanol	0.59	2.41		12/31/99
2,2,4-Trimethyl Pentane	0.33	1.33		12/31/99
2,3-Dimethyl Butane	0.30	1.20		12/31/99
2-Ethoxy-Ethanol	0.90	3.65		12/31/99
2-Methyl-2-Butene	2.74	11.13		12/31/99

2-Pentenes	2.84	11.51		12/31/99
3-Carene	0.60	2.44		12/31/99
3-Methyl-1-Butene	1.78	7.23		12/31/99
Acetaldehyde	1.54	6.26		12/31/99
Acetic Acid	0.00	0.00		12/31/99
Acetone	0.00	0.00		12/31/99
Acrolein	0.89	3.63		12/31/99
a-Pinene	0.96	3.88		12/31/99
Benzaldehyde	0.00	0.00		12/31/99
Biacetyl	4.31	17.51		12/31/99
b-Pinene	0.47	1.93		12/31/99
C3 Aldehydes	1.85	7.49		12/31/99
C4 Internal Alkenes	3.24	13.15		12/31/99
C5 Terminal Alkanes	1.78	7.23		12/31/99
C6 Cycloalkanes	0.41	1.67		12/31/99
C6 Terminal Alkanes	1.40	5.69		12/31/99
C8 Disub. Benzenes	3.49	14.16		12/31/99
C9 Trisub. Benzenes	3.37	13.67		12/31/99
Carbon Monoxide	0.02	0.06		12/31/99
Carbon Tetrachloride	0.00	0.00		12/31/99
Chloroform	0.01	0.04		12/31/99
Chloropicrin	0.26	1.04		12/31/99
cis-2-Butene	3.11	12.64		12/31/99
cis-2-Pentene	2.84	11.51		12/31/99
Cyclohexane	0.41	1.67		12/31/99
Cyclopentane	0.65	2.64		12/31/99
D4 Cyclosiloxane	0.00	0.00		12/31/99
D5 Cyclosiloxane	0.00	0.00		12/31/99
Dichloromethane	0.01	0.04		12/31/99
Diethyl Ether	0.91	3.68		12/31/99
Dimethyl Ether	0.22	0.90		12/31/99
Dimethyl Glutarate	0.10	0.41		12/31/99
Dimethyl Succinate	0.05	0.21		12/31/99
d-Limonene	0.72	2.91		12/31/99
Ethane	0.08	0.32		12/31/99
Ethanol	0.42	1.71		12/31/99
Ethyl Acetate	0.17	0.70		12/31/99
Ethyl Benzene	0.55	2.25		12/31/99
Ethyl Isopropyl Ether	0.89	3.60		12/31/99
Ethylene Glycol	0.56	2.28		12/31/99
Formic Acid	0.00	0.00		12/31/99

Hexamethyldisiloxane	0.00	0.00		12/31/99
Hydroxymethyldisiloxane	0.00	0.00		12/31/99
Isobutane	0.32	1.31		12/31/99
Isobutene	1.42	5.76		12/31/99
Isobutyl Alcohol	0.55	2.24		12/31/99
Isoprene	2.30	9.35		12/31/99
Isopropyl Alcohol	0.18	0.72		12/31/99
Methacrolein	1.31	5.32		12/31/99
Methane	0.00	0.02		12/31/99
Methyl Acetate	0.03	0.10		12/31/99
Methyl Ethyl Ketone	0.35	1.42		12/31/99
Methyl Glyoxal	3.35	13.58		12/31/99
Methyl Isobutyl Ketone	0.85	3.45		12/31/99
Methyl t-Butyl Ether	0.18	0.72		12/31/99
Methylcyclohexane	0.48	1.94		12/31/99
Methylcyclopentane	0.80	3.24		12/31/99
Methylvinyl ketone	1.68	6.80		12/31/99
m-Xylene	3.49	14.16		12/31/99
n-Butane	0.29	1.16		12/31/99
n-Butyl Acetate	0.24	0.96		12/31/99
n-C16	0.08	0.33		12/31/99
n-C17	0.08	0.32		12/31/99
n-C18	0.08	0.32		12/31/99
n-C19	0.07	0.28		12/31/99
n-C20	0.07	0.28		12/31/99
n-C21	0.07	0.28		12/31/99
n-C22	0.06	0.24		12/31/99
n-Decane	0.13	0.52		12/31/99
n-Dodecane	0.10	0.39		12/31/99
n-Heptane	0.22	0.89		12/31/99
n-Hexane	0.29	1.17		12/31/99
n-Nonane	0.14	0.58		12/31/99
n-Octane	0.17	0.70		12/31/99
n-Pentadecane	0.09	0.35		12/31/99
n-Pentane	0.36	1.44		12/31/99
n-Propyl Alcohol	0.67	2.73		12/31/99
n-Tetradecane	0.09	0.36		12/31/99
n-Tridecane	0.10	0.39		12/31/99
n-Undecane	0.12	0.47		12/31/99
o-Xylene	2.08	8.44		12/31/99
Perchloroethylene	0.01	0.04		12/31/99

Propane	0.14	0.57		12/31/99
Propene	2.72	11.03		12/31/99
Propylene Carbonate	0.11	0.45		12/31/99
Propylene Glycol	0.61	2.46		12/31/99
p-Trifluoromethyl-C1-Benzene	0.03	0.12		12/31/99
p-Xylene	0.71	2.89		12/31/99
s-Butyl Alcohol	0.39	1.59		12/31/99
t-Butyl Acetate	0.04	0.15		12/31/99
t-Butyl Alcohol	0.10	0.40		12/31/99
Toluene	1.26	5.11		12/31/99
trans-2-Butene	3.24	13.15		12/31/99
trans-2-Pentene	2.84	11.51		12/31/99

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94534 Exemptions

All of the exemptions specified in section 94523 shall apply.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94535 Administrative Requirements

(a) For the purposes of this article all of the provisions in section 94524(a), and (c)(1, 3-5) shall apply.

(b) **Labeling Requirements**

(1) Both the manufacturer and responsible party for each aerosol coating product subject to this article shall ensure that all products using this Article 3.1, clearly display the following information on each product container which is manufactured after the effective date of this article;

(A) the applicable CLEAR limit for the product that is specified in section 94532(a)(2);

(B) the aerosol coating category as defined in section 94521, or an

abbreviation of the coating category; and

(C) the day, month, and year on which the product was manufactured, or a code indicating such date.

(2) The information required in section 94535(b)(1), shall be displayed on the product container such that it is readily observable without removing or disassembling any portion of the product container or packaging. For the purposes of this subsection, information may be displayed on the bottom of a container as long as it is clearly legible without removing any product packaging.

(3) No person shall remove, alter, conceal, or deface the information required in section 94535(b)(1) prior to final sale of the product.

(4) For any aerosol coating product subject to section 94532(a), if the manufacturer or responsible party uses a code indicating the date of manufacture or an abbreviation of the coating category as defined in section 94521, an explanation of the code or abbreviation must be filed with the Executive Officer prior to the use of the code or abbreviation.

(c) **Reporting Requirements**

Any responsible party choosing to sell products meeting the CLEAR limits in section 94532, shall, within 30 days of offering for sale, submit to the Executive Officer of the Air Resources Board a report containing all of the following information:

(1) the product name, product category, and CLEAR limit;
(2) the complete speciation of pre- and post-reformulation products by weight percent of the nearest 0.1 percent;
(3) the total $PWMIR_{abs}$ of the product pre- and post-reformulation;
(4) the California Sales Data for the most recent twelve (12) month period that data are available;
(5) the company name, mailing address, contact person, and the telephone number of the contact person.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code.
Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94536 Variances

No variances will be allowed from the provision of this Article 3.1.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94537 Test Methods

Compliance with the requirements of this article shall be determined by using the test methods found in section 94526(b-f), which are incorporated by reference herein. Additionally, VOC speciation shall be determined using a variation of ARB Method 310, to be determined.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94538 Severability

For the purposes of this article all the provisions in section 94527 shall apply.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94539 Federal Enforceability

For purposes of federal enforceability of this article, the United States Environmental Protection Agency is not subject to approval determinations made by the Executive Officer under section 94537.

NOTE: Authority cited: section 39600, 39601, and 41712, Health and Safety Code. Reference: sections 39002, 39600, 40000, and 41712, Health and Safety Code.